Montana's Circle of American Masters

Inspired by Our Lands...made by Our Hands

Object: Mosaic Damascus Hunter **|** Blade length: 4" Guard material: 416 stainless
Handle material: Carved and textured African blackwood

Artist Background: Edward Caffrey, Bladesmith | Medium: Metal

Rather unknowingly, Ed Caffrey began his knife-making career when he was 12 years old. That summer, he and his best friend put up hay on farms, saving their money for new knives to use during the trapping season. Once they had their new knives, they couldn't wait to use them on their first catch – a 50-pound beaver. However, when skinning it, Ed's knife dulled quickly. He had to sharpen his knife five times, and his friend sharpened his four times. From that point forward, he began his search for a better knife, looking around the farm for anything that might make a good knife, even borrowing his grandmother's butcher knives.

At 18, Ed joined the US Air Force and married his wife Cindy. He continued his efforts to try to make a better knife, and his interest grew even more when he learned about the American Bladesmith Society (ABS). Gathering a few hand tools and using a picnic table for a workbench, he made crude knives from anything he could find, including old saw blades. His military career took him to Europe and to Arkansas where he met his first two mentors. He joined the ABS and began to work in earnest to become a full-fledged master bladesmith. His landlord let him build an 8'x12' shed, and he began forging metal in that small shop.

At first all the knives he made were given as gifts to friends and family. Then, in 1989, he sold a small knife to his first real customer for $40 and suddenly had enough money to buy materials for six more knives. His career as a bladesmith had begun. In 1992, Ed moved to Great Falls and built a workshop, and in 1994, he received his ABS Journeyman Smith stamp. In 2000, he tested for and received his ABS Mastersmith rating. He is one of only 111 living Mastersmiths, a rating that also evaluates how a smith encourages and assists others who want to achieve the same degree of excellence.

Ed's signature knife is made from mosaic Damascus steel, which is created through a process of folding and heat-forging layers of steel, then grinding and polishing them to expose the layers. The variations in the patterns are endless. The legendary sharpness and strength of this metal dates back to at least 1100 AD. Swords made out of Damascus steel have been said to break regular blades and cut through rock!

His passion for steel continues to grow, fueled by mentors along the way. He believes that "a knife is more than a certain type of steel… in order for a knife to be all that it can be, the maker must take the overall package into consideration: blade geometry, taper, weight, balance, flexibility, edge retention and ease of sharpening are all part of it." Wayne Godderd, a fellow Mastersmith, once told him that a knife must "look good, feel good and work good." Aside from making his knives, Ed teaches at hammer-ins, workshops, and one-on-one sessions all over the US, Europe and Canada. Every year, he also travels to tradeshows to sell his work and share its story.

Cynthia Caffrey photo

Lesson Plan: **Montana Standards for Arts: 1, 2, 3, 4, 5, 6**
<http://www.opi.mt.gov/Accred/cstandards.html>

Goals and objectives:
The learner will gain an understanding of the design and production process of decorative metal known as Damascus steel. Students will explore the concept of layering and folding material to create pattern by using Sculpey clay to create a blade-shaped bookmark.

Edward Caffrey believes that a knife is first and foremost a tool and that the function of his knives must come before the looks or the art form of his knife. Even if the knife is an "art knife" it must keep an edge, have good balance and work as a fine cutting tool. He is known for his use of Damascus steel for his knife blades.

Damascus steel is a process in which different colors of steel are layered one on another and heated in a forge which makes the metal soft. Then it is hammered and folded back on itself, then heated and hammered again. The process continues as the soft steel mixes and blends into unique patterns. Damascus was legendary for its sharpness and strength and Damascus swords are claimed to be able to cut through ordinary steel swords.

Warm-up/pre-project preparation:

- Look at examples of Damascus steel on Edward Caffrey's website: <www.caffreyknives.net>
- Have students make note of the different blade shapes.
- Discuss the types of knives students are familiar with, what they are used for and why the blades differ according to use.
- Discuss the history of steel, what steel is, when it was first used and for what purposes.

Materials needed:

- Sculpey clay of several colors.
- An oven or toaster oven to bake the Sculpey. This clay usually bakes at 275 degrees for 15 minutes per ¼ inch thickness, but check the directions on the package and remember that oven temperatures vary so keep an eye on the pieces as they bake.
- Other decorations as desired.

Project:

Have students:

1. Plan a bookmark in the shape of a blade.

2. Pick two colors of Sculpey clay, and then start by rolling the clay back and forth in their hands to soften the clay. Then shape it into thin rectangles.

3. Layer the clay in alternating colors using thin layers approximately 1/8 inch thick, 1 inch wide and 3 inches long.

4. Using their fists as hammers, carefully and lightly pound the clay, keeping their fist at an angle, to slightly flatten the clay from one end of the Sculpey to the other. (The idea is to slowly "weld" the layers by lightly pounding and flattening with their fingers. Pounding at an angle from one end to another will also lengthen the clay.)

5. When the Sculpey has been successfully pounded from one end to another and the layers are sticking together, fold it back lengthwise on itself and again pound and press with fingers until it is thinner and longer. Then, fold it over widthwise and slowly flatten again until a pattern of color is achieved.

6. Form clay into a blade shape; a hole can be made in the top end of the "blade" so that later a ribbon or tassel can be added to hang out of the top of a book.

7. The Sculpey is then baked according to package directions. Clay will bake better if the thickness is uniform throughout the blade.

8. After "blade" is baked, decorations can be glued on and ribbons tied on, if desired.

Evaluation:

- Students stayed on task and completed project
- Students slowly and carefully pounded clay
- Students folded clay in several different directions
- Students did not immediately flatten clay but worked to create pattern
- Students shaped clay into appropriate shape
- Students followed oven safety rules

Cross curriculum:

- Science: Steel composition
- History: When were copper, bronze, and steel first used? What were the first uses of these metals?
- Geology: Where do you find these metal ores?
- Reading: King Arthur and the story of Excalibur

Vocabulary:

Steel – a mix of iron and carbon and other metals to make a strong metal
Forge – a furnace used to heat metal to a high temperature to make it soft
Weld – traditionally a method to join together pieces of metal by heating them until soft and hammering them until they fuse or stick together. This process can also be called forging. In modern day, welding is done using metal rods that melt and join together two metal surfaces.
Balance – a position in which an object weighs the same on one end as it does on the other. For Ed Caffrey's knives this would mean that the blade side weighs about the same as the handle side and is easy to use.
Function – the purpose of an object; what is it made to do
Alternate – to arrange items in a regular pattern such as layering the Sculpey clay one layer white then black then white then black and so on
Unique – one of a kind, something that is special and different from others

Think About It!

- Take a look at Edward Caffrey's website.
- Are there any of his knives that you like better than others? Why?
- In what way does the decoration on the blade make the knife special?
- Why do you think he takes so much time to make the Damascus steel?
- Would his blades work the same if they had plain blades?
- Why do you think he makes the blades so special if they are to be used, not just displayed as "art"?
- Why would people want a functional item to also be decorative?

Lesson plan:

Cheryl Bannes, artist-in-residence, Lewistown, Montana

Direct questions to:

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Further resources at: www.art.mt.gov